

Connectors for electrical and electronic equipment -  
Part 5: Detail specification for 2-way M8 and M12  
circular connectors, shielded or unshielded, free and  
fixed - Mechanical mating information, pin assignment  
and additional requirements for Type 5

## EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN IEC 63171-5:2022 sisaldab Euroopa standardi EN IEC 63171-5:2022 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 63171-5:2022 consists of the English text of the European standard EN IEC 63171-5:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.10.2022.	Date of Availability of the European standard is 21.10.2022.
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English Version

Connectors for electrical and electronic equipment - Part 5:  
Detail specification for 2-way M8 and M12 circular connectors,  
shielded or unshielded, free and fixed - Mechanical mating  
information, pin assignment and additional requirements for  
Type 5  
(IEC 63171-5:2022)

Connecteurs pour équipements électriques et électroniques  
- Partie 5: Spécification particulière pour les connecteurs  
circulaires M8 et M12 à 2 pôles, à fiches et embases  
écranées ou non écranées - Informations d'accouplement  
mécanique, affectation des broches et exigences  
supplémentaires pour le type 5  
(IEC 63171-5:2022)

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Kontaktstiftbelegung und zusätzliche Anforderungen für  
Typ 5  
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## European foreword

The text of document 48B/2973/FDIS, future edition 1 of IEC 63171-5, prepared by SC 48B "Electrical connectors" of IEC/TC 48 "Electrical connectors and mechanical structures for electrical and electronic equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63171-5:2022.

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IEC 60068 (series)	NOTE Harmonized as EN 60068 (series)
IEC 60512-5-2:2002	NOTE Harmonized as EN 60512-5-2:2002 (not modified)
IEC 60512-6-3:2002	NOTE Harmonized as EN 60512-6-3:2002 (not modified)
IEC 60512-6-4:2002	NOTE Harmonized as EN 60512-6-4:2002 (not modified)
IEC 60512-8-2:2011	NOTE Harmonized as EN 60512-8-2:2011 (not modified)
IEC 60512-13-2:2006	NOTE Harmonized as EN 60512-13-2:2006 (not modified)
IEC 60512-13-5:2006	NOTE Harmonized as EN 60512-13-5:2006 (not modified)
IEC 61076-2-010	NOTE Harmonized as EN IEC 61076-2-010
IEC 61984	NOTE Harmonized as EN 61984
IEC 62430	NOTE Harmonized as EN IEC 62430

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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2 pôles, à fiches et embases écrantées ou non écrantées – Informations  
d'accouplement mécanique, affectation des broches et exigences  
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supplémentaires pour le type 5**

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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	9
2 Normative references .....	9
3 Terms and definitions .....	10
4 Common features and typical connector pair .....	11
4.1 Systems of levels.....	11
4.1.1 Performance levels .....	11
4.1.2 Compatibility levels, according to IEC 61076-1 .....	11
4.2 Pin assignment .....	11
4.3 Codings .....	11
4.4 Classification into climatic categories.....	11
4.5 Creepage and clearance distances .....	11
4.6 Current-carrying capacity.....	11
4.7 Marking.....	11
4.8 Characteristics.....	11
5 Dimensional information .....	12
5.1 General.....	12
5.2 Isometric view and common features .....	12
5.2.1 General .....	12
5.2.2 Common features .....	12
5.2.3 Reference system.....	12
5.3 Engagement (mating) information – Engaging (mating) direction.....	12
5.4 Fixed connectors .....	13
5.4.1 Overview about styles for fixed connectors .....	13
5.4.2 Interface dimensions – Fixed connectors M8 .....	13
5.4.3 Interface dimensions – Fixed connectors M12 .....	13
5.5 Free connectors.....	13
5.5.1 Overview about styles for free connectors .....	13
5.5.2 Style KF .....	13
5.5.3 Style MF .....	14
5.5.4 Interface dimensions – M8 free connector.....	15
5.5.5 Interface dimensions – M12 free connector.....	15
5.6 Interface dimensions – M8 male connector .....	15
5.7 Interface dimensions – Female connectors M8.....	17
5.8 Interface dimensions – Male connector M12 .....	19
5.9 Interface dimensions – Female connector M12 .....	21
5.10 Terminations.....	23
5.11 Mounting information for connectors .....	23
5.12 Gauges .....	24
5.12.1 Sizing gauges and retention force gauges .....	24
5.12.2 Test panel (for voltage proof test).....	24
5.12.3 Test panel (for EMC/ crosstalk, etc.).....	24
6 Characteristics .....	25
6.1 General.....	25
6.2 Pin assignment and other definitions.....	25



6.3	Classification into climatic categories .....	25
6.4	Electrical characteristics .....	25
6.4.1	Creepage and clearance distances .....	25
6.4.2	Voltage proof .....	25
6.4.3	Current-temperature derating .....	25
6.4.4	Initial contact resistance – interface only (separable fixed and free contact) .....	26
6.4.5	Input to output DC resistance .....	26
6.4.6	Input to output DC resistance unbalanced .....	26
6.4.7	Initial insulation resistance .....	26
6.5	Transmission characteristics .....	26
6.5.1	General .....	26
6.5.2	Insertion loss .....	26
6.5.3	Return loss .....	26
6.5.4	Propagation delay .....	26
6.5.5	Transverse conversion loss .....	26
6.5.6	Transverse conversion transfer loss .....	26
6.5.7	Transfer impedance (shielded only) .....	26
6.5.8	Coupling attenuation .....	26
6.5.9	Power sum alien (exogenous) NEXT .....	27
6.5.10	Power sum alien (exogenous) FEXT .....	27
6.6	Mechanical characteristics .....	27
6.6.1	Mechanical operation .....	27
6.6.2	Effectiveness of connector coupling devices .....	27
6.6.3	Insertion and withdrawal forces .....	27
6.6.4	Polarization and coding method .....	27
6.6.5	Dynamic stress .....	27
7	Tests and test schedule .....	27
7.1	General .....	27
7.2	Contact resistance measurement .....	27
7.3	Arrangement for vibration test .....	28
7.4	Test procedures and measuring methods .....	29
7.5	Preconditioning .....	29
7.6	Test schedules .....	29
7.7	Basic (minimum) test schedule .....	29
7.8	Full test schedule .....	29
Annex A (normative)	Contact designation for balanced cabling M8 .....	30
A.1	Cable connection with M8 .....	30
Annex B (normative)	Contact and pair designation for balanced cabling M12 .....	31
B.1	Cable connection with M12 .....	31
	Bibliography .....	32
	Figure 1 – Relationships between the IEC 63171 series documents and their related references .....	7
	Figure 2 – Type 5 connector overview .....	8
	Figure 3 – Engagement (mating) information .....	12
	Figure 4 – Free connector style KF .....	13
	Figure 5 – Free connector style MF .....	14

Figure 6 – M8 male connector interface .....	16
Figure 7 – M8 female connector interface .....	18
Figure 8 – M12 male connector interface .....	20
Figure 9 – M12 female connector interface .....	22
Figure 10 – Gauge dimensions .....	24
Figure 11 – Contact resistance test arrangement .....	27
Figure 12 – Dynamic stress test arrangement .....	28
Figure A.1 – Mating side contact arrangement for balanced cabling with M8 .....	30
Figure B.1 – Mating side contact arrangement for balanced cabling with M12 .....	31
Table 1 – Dimensions of free connector style KF .....	14
Table 2 – Dimensions of free connector style MF .....	15
Table 3 – Dimensions of M8 male connector .....	17
Table 4 – Dimensions of M8 female connector .....	19
Table 5 – Dimensions of M12 male connector .....	21
Table 6 – Dimensions of M12 female connector .....	23
Table 7 – Gauges .....	24
Table 8 – Creepage and clearance distances .....	25
Table A.1 – Contact and pair designation for balanced cabling with M8 .....	30
Table B.1 – Contact and pair designation for balanced cabling with M12 .....	31

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT –****Part 5: Detail specification for 2-way M8 and M12 circular connectors, shielded or unshielded, free and fixed – Mechanical mating information, pin assignment and additional requirements for Type 5**

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The text of this International Standard is based on the following documents:

Draft	Report on voting
48B/2973/FDIS	48B/2983/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

A list of all parts of IEC 63171 series, under the general title *Connectors for electrical and electronic equipment*, can be found on the IEC website.

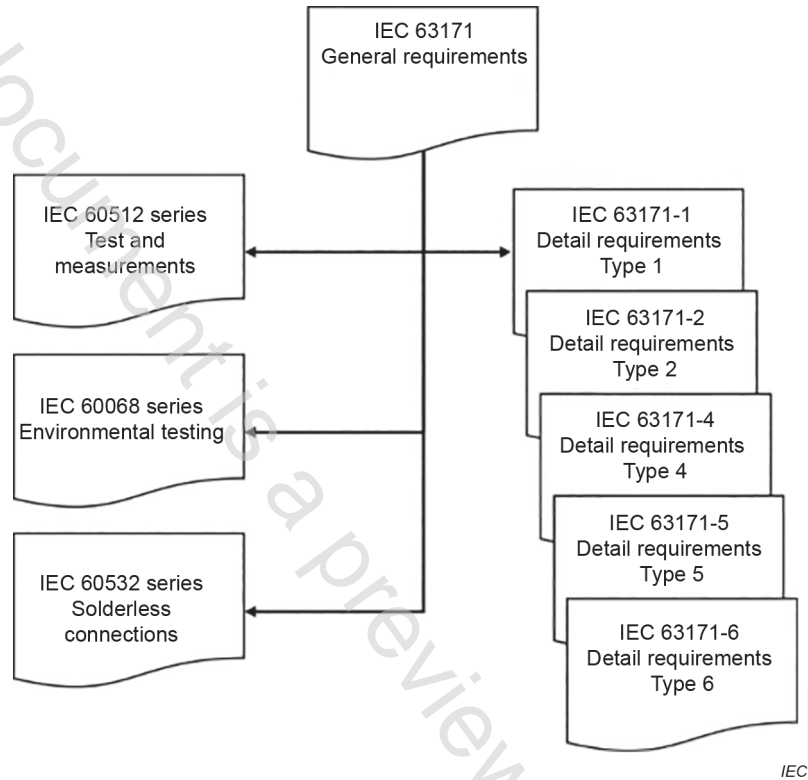
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## INTRODUCTION

IEC 63171 is the base specification of the whole series. Subsequent specifications do not duplicate information given in the base document, but list only additional requirements. For complete specification regarding a component of a higher number document all lower numbered documents shall be considered as well. Figure 1 shows the interrelation of the documents.



**Figure 1 – Relationships between the IEC 63171 series documents and their related references**

NOTE IEC 63171-1 and IEC 63171-6 contain duplicate information, which is either equal to or better than the minimum requirements of this document; such duplicate information will be removed in later editions.

This document refers to International Standards for test and measurement, environmental testing as well as solderless connections.

A general overview about the connectors in this document is shown in Figure 2.

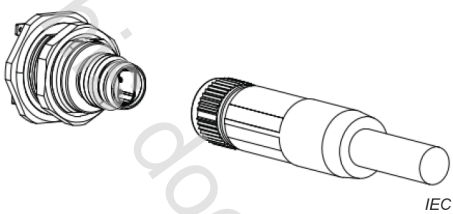
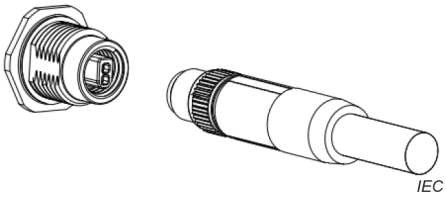
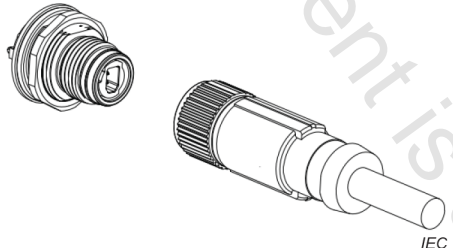
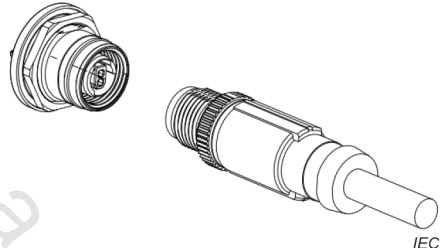
<p>IEC SC 48B – Electrical connectors</p> <p>Specification available from: IEC General secretariat or from the addresses shown on the inside cover.</p>		<p>IEC 63171-5 Ed. 1</p>
 <p>Fixed connector: M8 outer thread and male contacts Free connector: M8 inner thread and female contacts</p>	 <p>Fixed connector: M8 inner thread and female contacts Free connector: M8 outer thread and male contacts</p>	<p>Circular connectors for data and power applications with 2 ways in a M8 and in a M12 style system</p> <p>Male and female connectors Male and female contacts</p> <p>Rewireable – Non-rewireable</p>
 <p>Fixed connector: M12 outer thread and male contacts Free connector: M12 inner thread and female contacts</p>	 <p>Fixed connector: M12 inner thread and female contacts Free connector: M12 outer thread and male contacts</p>	<p>Free cable connectors Straight and angled connectors</p> <p>Fixed connectors Flange mounting Single hole mounting</p>

Figure 2 – Type 5 connector overview

## CONNECTORS FOR ELECTRICAL AND ELECTRONIC EQUIPMENT –

### Part 5: Detail specification for 2-way M8 and M12 circular connectors, shielded or unshielded, free and fixed – Mechanical mating information, pin assignment and additional requirements for Type 5

#### 1 Scope

This part of IEC 63171 describes 2-way shielded or unshielded circular connectors with IP65/IP67 M8 or M12 locking, typically used for balanced single-pair data transmission with frequencies up to 600 MHz and with current-carrying capacity up to 4 A, for use in areas with harsh environmental conditions.

These connectors consist of fixed and free connectors, either rewirable or non-rewirable. Male connectors have square cross-section contacts.

M12 describes the dimensions of the styles and thread of the screw-locking mechanism according to IEC 61076-2-101 of this size of circular connectors. M8 describes the dimensions of the styles and thread of the screw-locking mechanism according to IEC 61076-2-104.

Use of alternative locking mechanisms according to IEC 61076-2-010 (push-pull locking) or IEC 61076-2-011 (bayonet locking) is possible, within the corresponding size.

The coding provided by this document prevents the mating of accordingly coded male or female connectors to other similarly sized interfaces covered by this or other documents.

This document covers Type 5 connectors. Each part of this series has the associated type number equal to the number of the part in the series. All connectors in the IEC 63171 series are deemed to provide the same functions as defined in IEC 63171:2021, using different mechanical interfaces.

These Type 5 connectors are interoperable with Type 2 connectors according to IEC 63171-2, except the locking and sealing system provided by the outer shell.

The shielded and unshielded connectors are interoperable for their internal transmission performance and can be exchanged. The shielded version has improved EMC and coupling properties.

#### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-581, *International Electrotechnical Vocabulary (IEV) – Part 581: Electromechanical components for electronic equipment*

IEC 60352 (all parts), *Solderless connections*

IEC 60512-1, *Connectors for electrical and electronic equipment – Tests and measurements – Part 1: Generic specification*

IEC 60512-28-100:2019, *Connectors for electrical and electronic equipment – Tests and measurements – Part 28-100: Signal integrity tests up to 2 000 MHz – Tests 28a to 28g*

IEC 60664-1, *Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests*

IEC 60999-1, *Connecting devices – Electrical copper conductors – Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm<sup>2</sup> up to 35 mm<sup>2</sup> (included)*

IEC 61076-1:2006, *Connectors for electronic equipment - Product requirements – Part 1: Generic specification*

IEC 61076-1:2006/AMD1:2019

IEC 61076-2-101, *Connectors for electronic equipment – Product requirements – Part 2-101: Circular connectors – Detail specification for M12 connectors with screw-locking*

IEC 61076-2-104, *Connectors for electronic equipment – Product requirements – Part 2-104: Circular connectors – Detail specification for circular connectors with M8 screw-locking or snap-locking*

IEC 61760-3, *Surface mounting technology – Part 3: Standard method for the specification of components for through hole reflow (THR) soldering*

IEC TR 63040, *Guidance on clearances and creepage distances in particular for distances equal to or less than 2 mm – Test results of research on influencing parameters*

IEC 63171:2021, *Connectors for electrical and electronic equipment – Shielded or unshielded free and fixed connectors for balanced single-pair data transmission with current carrying capacity – General requirements and tests*

IEC 63171-2, *Connectors for electrical and electronic equipment – Part 2: Detail specification for 2-way, shielded or unshielded, free and fixed connectors – Mechanical mating information, pin assignment and additional requirements for Type 2*

ISO/IEC 11801-1, *Information technology – Generic cabling for customer premises – Part 1: General requirements*

ISO 21920-1:2021, *Geometrical product specifications (GPS) – Surface texture: Profile – Part 1: Indication of surface texture*

IEEE 802.3, *IEEE Standard for Ethernet*

### **3 Terms and definitions**

For the purposes of this document, the terms and definitions given in IEC 63171:2021, IEC 60050-581, and IEC 60512-1 apply, as well as the following.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>